

# OCCURRENCE OF *LIMNOCNIDA INDICA* ANNANDALE IN THE PANDRI RIVER (WESTERN GHATS, KARNATAKA, INDIA), WITH A NOTE ON FRESHWATER MEDUSAE OF INDIA<sup>1</sup>

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(With a text-figure)

**Key words:** Western Ghats, *Limnoccnida*, freshwater medusa

The present short communication concerns a medusa which appeared in a pool of Pandri river (a tributary of Kali river in Kalinadi hydroelectric project area, Western Ghats, Uttara Kannada District, Karnataka State, India) and an account of freshwater medusae of India

Though Alcock (1911) had seen medusae in a lake at Purulia (Chota Nagpore) in 1879-80, Annandale (1911) was the first to record freshwater medusa from India and to describe the same as *Limnoccnida indica* (Annandale 1919). The history of occurrence of *L. indica* and a few other medusae in Indian waters is given in Tables 1 and 2 respectively. It is noteworthy that freshwater medusae were found in a river system which flows eastwards to enter the Bay of Bengal and westwardly flowing across the continent to enter the Arabian Sea. However, many of the workers opined that the agency responsible for their introduction into the respective localities will remain a matter of speculation until further studies are carried out (Jones 1951, Joshi and Tonapi 1965, Malhotra *et al.* 1976).

The Western Ghats have some peculiarities of its fauna, the most striking being the presence of a marine element, which attracted attention, and more information about one species, *L. indica* is badly needed (Hora 1926). Whether the medusae occur in the pool year after year is worth investigating in view of speculations regarding origin and distribution of *L. indica* (Ramakrishna *et al.* 1950). There is a lone report on the occurrence of *L. indica* in Thunga river (in one and the same pool) in successive years (Iyengar and Venkatesh 1955-56). While carrying out limnological work in

the six sampling stations (Fig. 1), I could observe the presence of freshwater medusae, specially during summer months. In summer (March, April, May) of 1985, I could see the presence of medusae in the pool of the Pandri river (A<sub>1</sub>), but not in the other five sampling stations.

The Pandri river (perennial inflow) is a tributary of Kali river and at its confluence near Ganeshgudi, is the Supa dam (tallest in Karnataka- height 101 m). To date the Supa reservoir has not reached its maximum level (564 m at FRL). The sampling site A<sub>1</sub> will be submerged, when the reservoir attains its full supply level. The geology, morphometric details of the Supa dam site, water chemistry and zooplankton availability are reported in earlier publications (Birasal *et al.* 1985, 1987, 1989). The observations made in the summer season of five years (1986 to 90) and recorded the presence of medusa, *L. indica*.

Though several workers have reported the occurrence of *Limnoccnida* in many rivers of India, the life history of the medusa has remained more or less obscure. (i) The reiterated belief that the presence of budding in the life cycle of *L. indica*, so frequently observed in its African relative *L. tanganyikae* (Beadle and Thomas 1957), (ii) speculations made by Annandale (1919) that a resting stage may intervene in the life history and (iii) Agharkar (1913) and Hora's (1926) opinion that one should look carefully for the growth of hydroid on the rocks, were my chief inducements to persue continuous observation for six consecutive

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TABLE 1  
OCCURRENCE OF *LIMNOCNIDA INDICA* IN INDIAN WATERS (WESTERN GHATS)

Sl. No.	Name of the river/reservoir/tank	Location	Recorded on	Some salient features of the sampling site	Reference
1	Koyna river ( a tributary of Krishna river)	At Tambi	1911	Deep pools	Hora 1926
2	Krishna river	At Dhom	1911	Deep pools	Hora 1926
3	Varna & Panchganga rivers ( tributaries of Krishna river)	-	May 1913	-	Rao 1932
4	Yenna (Vena) river (a tributary of Krishna river)	At Medha	April & May 1918	7-12 metres deep, Rocky bottom	Annandale 1919, Hora 1926
5	Periyar lake (formed by damming a west flowing Periyar river)	In Travancore	4.6.34	Lake is situated at an elevation of 3-4 thousand feet	*Darling 1935
6	Pampadampara tank (in the Cardamom Hills, Travancore)	About 20 miles north of Periyar lake	1944	Artificial tank at an altitude of about 3000 feet; 5-8 feet deep; muddy bottom	Jones 1951
7	Sharavathi river	At the bottom pools of Jog falls (a sheer drop of 930 feet)	May 1947	Pool is 175 feet deep; Pool fed by an underground spring	Ramakrishna <i>et al.</i> 1950
8	Krishnarajasagar reservoir (on west flowing Cauvery river)	Near Sagarkatte about 7 miles above the dam	27.4.1949	Pool has rocky bed; 5 feet deep	Krishnamurthy 1953
9	Thunga river (west flowing)	Near Arkere 3 miles from Shirmoga	26.3.54 to 07.06.54 & on 25.2.55	Pool has sandy bed; 6.5 feet deep	Iyengar & Venkatesh 1955-56

\* Her Provisional identification of the medusa stopped with the genus (species identification needs proper examination of the collection.

TABLE 2  
OCCURRENCE OF FRESHWATER MEDUSAE IN INDIAN WATERS

Sl. No.	Name of the species	Location	Recorded on	Peculiarities of the specimen	Reference
1	<i>Moerisia gangetica</i>	Shambazar Khal, Dakshinidar, Near Calcutta (Gangetic water system)	13.05.1926 (only one specimen)	a. Spherical shaped umbrella (3 mm in diameter & 2 mm in height) b. Manubrium-quadrangular c. One gonad encircling the manubrium d. 19 marginal tentacles (all of about same size) e. Each tentacle has a short, semiglobular basal bulb.	Kramp 1958
2	<i>Craspedacusta sowerbyi</i>	Expenimental aquarium tank of Zoology Department of Poona University	18.08.1962 (about 20 specimens appeared within two weeks)	a. Bell shaped umbrella (0.4 mm in diameter & 0.3 mm in height) b. Gonads not noticed (slight thickenings in the vicinity of radial canal in some specimens is significant) c. 8 cylindrical, solid tentacles having 0.2 mm in lngth (all of about the sam size).	Joshi & Tonapi 1965
3	<i>Mansariella lacustris</i> (Generic name after the name of the lake and species name after the nature of the lake)	Mansar lake, Jammu (sub-tropical, isolated, springfed freshwater lake situated at a height of 700 m AMSL)	September & October (in large numbers)	a. Medusae are umbrella shaped (maximum diameter 15 mm) b. No gonads (young medusoid forms appear to bud-off from gastric region of the bigger forms) c. Nearly 160 tentacles measuring 20 mm in length arranged in a single row d. Base of tentacle is swollen with a statocyst e. Tentacles do not show any terminal sucker or adhesive pad f. Mouth is circular (15 mm in diameter).	Malhotra et al. 1976
4	<i>Keralica idukkenis</i> (Generic name after the state and species name after the reservoir)	Idukki reservoir (Hydroelectric project, Kerala)	1983 (collected throughout monsoon, post-monsoon & in early months of pre-monsoon)	a. Gonads are slightly visible as small thickenings on radial canals in young forms b. 128 solid tentacles measuring upto 2 mm in length (all of about same size) originating from circular canal, arranged in a single row c. Beaded appearance of base of tentacle due to presence of statocyst d. Tentacles do not have terminal sucker or adhesive pad e. Mouth is circular (1 mm in diameter); when open lips are arranged radially forming 6-lobed structure.	Khatri 1984

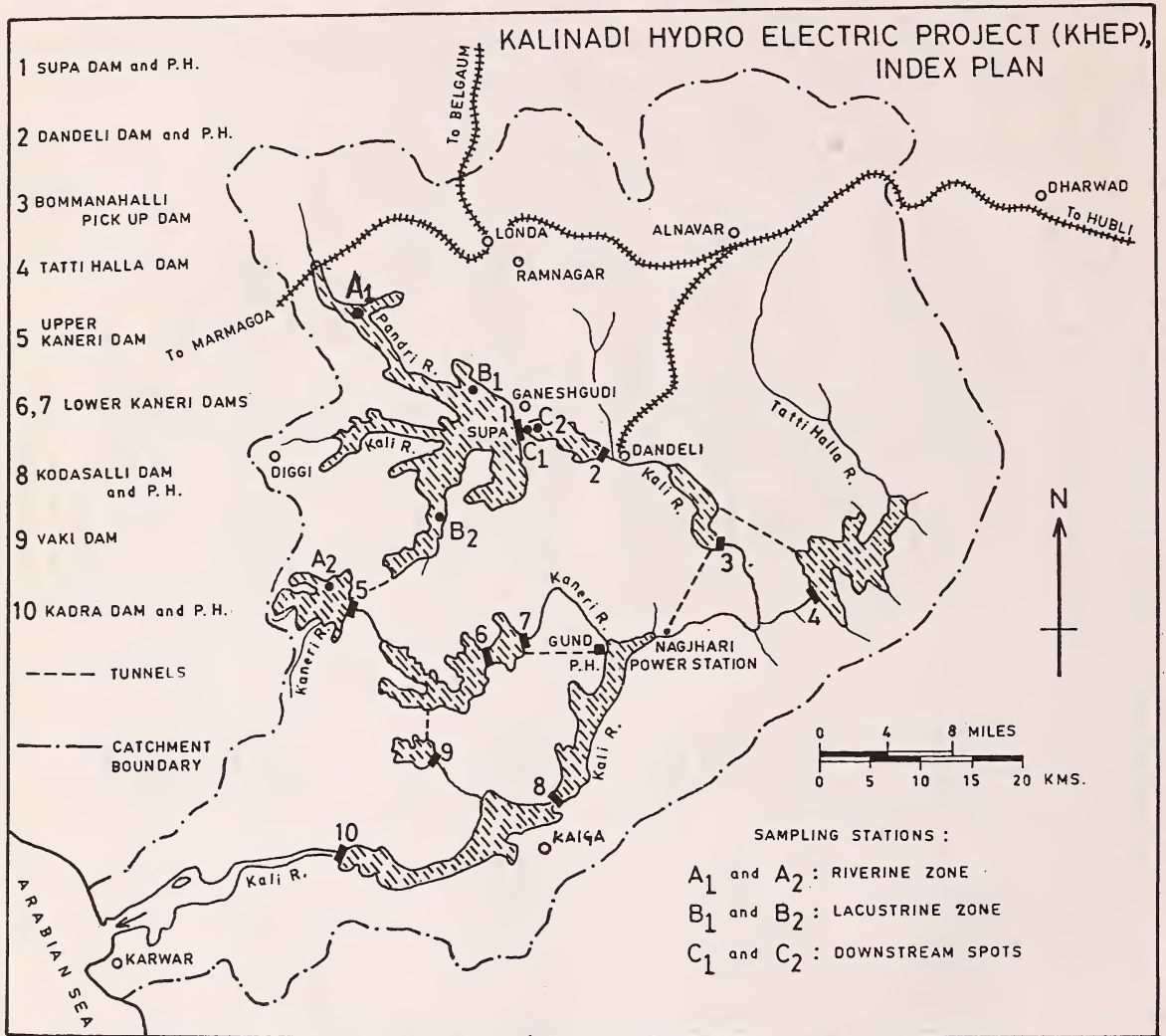


Fig. 1. Location of the sampling stations in KHEP area.

summer seasons (i.e. 1985-1990). During none of these visits was I able to see on the stone/rocks any organism which could be the hydroid stage of *L. indica*. The most probable explanation seems to be that the hydrozoan remains for the greater part of the year in an encysted condition and the medusa becomes fully developed under favourable conditions during the summer season.

The genus *Limnocoidea* hitherto recorded has been reported from many parts of India (Table 1) and Africa (Beadle 1981, Dumont and Verheye 1984, Green 1960, Kramp 1954). The presence of the freshwater medusa in the Pandri river extends its distribution to the western side of the Sahyadris. The medusa in all probability has a wider distribution than hitherto recorded both on the eastern as well as

western drainages of peninsular India. As to the occurrence of this medusa of unquestionable marine origin in the rivers/lakes of the two great continents of Africa and India, there is possibly one explanation, namely the ancestors of *Limnocyda* have passively migrated from an ancient sea, parts of which were cut-off from the ocean (as the result of seismic disturbances) and acclimatised themselves to incidental changes of an inland sea into freshwater areas. Occurrence of *Limnocyda* in Africa and India provides an instance of the sort of discontinuous distribution that might lend support to the view of

the existence of a former land connection between Africa and peninsular India.

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